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**PRELIMINARY AMENDMENT**

APPLICANTS: Klaus David Gradischnig et al. DOCKET NO: 112740-391

SERIAL NO: GROUP ART UNIT:

EXAMINER:

INTERNATIONAL APPLICATION NO: PCT/EP00/04355

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INVENTION: PROTOCOL DEVICE IN A PROTOCOL SYSTEM FOR TRANSMITTING MESSAGES

Assistant Commissioner for Patents,
Washington, D.C. 20231

Sir:

Please amend the above-identified International Application before entry into the National stage before the U.S. Patent and Trademark Office under 35 U.S.C. §371 as follows:

**In the Specification:**

Please replace the Specification of the present application, including the Abstract, with the following Substitute Specification:

SPECIFICATION

TITLE OF THE INVENTION

PROTOCOL DEVICE IN A PROTOCOL SYSTEM FOR TRANSMITTING MESSAGES

BACKGROUND OF THE INVENTION

Both user data and monitoring information are transmitted using communications protocols. In this case, many protocols ensure that the user data is transmitted to the receiver complete (that is to say, all transmitted data is also received) and with a protected sequence (that is to say, in the correct sequence defined by the transmitter). For the user data, this is often done by the transmitter

device in the protocol system successively numbering all the user data with a sequence number. (Message) packets which contain only monitoring information are normally not successively numbered, at least packets with certain classes of monitoring information. However, if the monitoring messages are now transmitted by the lower layer without sequence protection, this can lead to monitoring messages overtaking one another. If the fact that this overtaking has taken place is not identified, then, for the receiver of monitoring information, instead of working with up-to-date monitoring information, which is likewise available to it, it operates with obsolete monitoring information since it receives this as if it were up-to-date. This behavior is generally not critical for that monitoring information which confirms message reception, since this information does not become obsolete. However, the rejection of current monitoring information which relates to flow monitoring (for example, credit information) due to the use of obsolete information is critical, since this information becomes obsolete very quickly. Dynamic window sizes, which are defined by the receiver, are particularly affected by this.

Two definitions have been fixed with regard to flow monitoring. The term a "credit," which the receiver of user data messages (referred to as SD-PDUs in Q.2110) reserves for the transmitter via a monitoring message in this case, refers to the sequence number (contained in Q.2110 in the parameter N(MR) of a monitoring message; for example, a STAT-PDU or USTAT-PDU) of that user data message which is the first which is no longer accepted by the receiver. The term "window size" refers to a number of user data items which the receiver is prepared to accept. In this case, the sequence number (contained in Q.2110, in the parameter N(R) of a STAT-PDU or USTAT-PDU) is used as the counting starting point up to which the receiver has already received and acknowledged all the messages with a lower sequence number.

The present invention describes how the rejection of current control information is avoided and, in particular, how existing protocols which do not solve this problem can be upgraded so that they do solve this problem.

It could be suggested that this problem need not be dealt with if the lower protocol layer guarantees sequence-protected transmission. However, if it is

intended to set up a multilink connection using such a layer, then it must also be expected that messages will overtake one another in a layer such as this.

If a restriction is imposed such that the receiver cannot withdraw a credit once it has been allocated, then the abovementioned problem easily can be solved simply by not processing monitoring information which contravenes this rule. This corresponds to the solution in the TCP/IP protocol. This also includes the situation where the window size is constant.

A further simple possibility for solving the problem is to successively number all the monitoring information and then to treat the monitoring information in an analogous manner to the user data. However, it is difficult to introduce this retrospectively into the protocols, since the message format would generally need to be changed for numbering. However, this is generally unacceptable for compatibility reasons when upgrading existing protocols.

The capacity to withdraw the credit is an important characteristic in some protocols; for example, SSCOP. At the moment, the problem appears to be insoluble for protocols such as these.

## SUMMARY OF THE INVENTION

Pursuant to the teachings of the present invention, the receiver of the monitoring message can always decided whether this monitoring message received by it contains information which is newer than its current information state. It is, thus, impossible for older information to overwrite more current information when messages overtake one another.

In order to decide whether information obtained from a received monitoring message is newer than the already available information, protocol information (monitoring information which is used for monitoring the user data messages, for example confirming reception of user data messages, indicating that user data messages have not been received or containing the sequence number of that message up to which all messages have been received without any gaps) is used, provided this is possible. If the transmission sequence cannot be reconstructed on the basis of the protocol information contained in the monitoring messages, then the

only monitoring information items which are additionally successively numbered are those for which this is absolutely essential, and which allow such introduction.

One special feature of the present invention is the skillful combination of a message format change which is compatible with the existing protocol, with analysis of the protocol, in order to allow the receiver of the monitoring information to reconstruct the time sequence of transmission of the monitoring information. It is thus possible to reject old information.

Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the Figures.

## BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows a table of protocol information in a monitoring message in connection with the teachings of the present invention.

## DETAILED DESCRIPTION OF THE INVENTION

The following text describes three exemplary embodiments, which are all based on the SSCOP protocol. SSCOP, defined in Q.2110, assumes that the lower layer transmits the data with sequence protection. As discussed above, the problem under discussion does not occur here. However, SSCOP is at present being upgraded in order to have multilink compatibility and to function via a lower layer, which does not ensure sequence-protected transmission. This corresponds to the MSSCOP (the draft Q.2111 at the Standard before the start of the meeting of ITU-T-working party 5/11 and the notice of the Study Questionnaire 15/11, Washington, June 28 to July 1, 1999), as is currently being discussed in the ITU. However, the problem under discussion here is not solved there.

Exemplary Embodiment 1:

The simplest method consists of no longer having the capability to reduce the credit in the MSSCOP. However, this represents a major restriction of the protocol. On receiving a STAT-PDU, the credit information would be rejected if the received credit were less than the current credit.

Exemplary Embodiment 2:

In the MSSCOP protocol (the draft Q.2111 at the Standard before the start of the meeting of ITU-T-working party 5/11 and the notice of the Study Questionnaire 15/11, Washington, June 28 to July 1, 1999), as is currently under discussion, the transmission sequence can be reconstructed only from the protocol information in the STAT-PDUs and USTAT-PDUs. No message format need be changed in this exemplary embodiment.

In SSCOP, the transmitter (of the user data) uses the protocol information which is contained in the list elements and in the parameter N(R) of the received STAT- and USTAT-PDUs as follows:

When already transmitted user data messages are confirmed by list elements or the parameter N(R) of the received STAT- and USTAT-PDUs without any gaps up to a specific sequence number, the variable VT(A) of the transmitter is changed such that it once again contains the value of the next ("oldest") message to be confirmed.

Furthermore, the information in the list elements is used to decide whether certain messages in the transmission buffer must be retransmitted or have been confirmed by the receiver. The parameter N(R) is also used for the latter. If messages have been confirmed, they can be removed from the transmission buffer, otherwise this is not allowed by the user of the SSCOP. (In this case, the SSCOP parameter Clear Buffer has the value FALSE).

According to the present invention, an additional SSCOP Status Variable VT(H) is now introduced for the transmitter. The new variable VT(H) in each case stores the largest last list element of all the received STAT-PDUs and USTAT-PDUs; the last list element in the STAT-PDU indicates the highest SD-PDU expected by the receiver, assuming that the STAT-PDU contains any list elements at all, and, in a USTAT-PDU, the last list element is used to signal the first SD-PDU received after the reception gap signaled by the USTAT-PDU.

If a received STAT-PDU does not contain any list elements, then the parameter N(R) contained in the STAT-PDU is used for adaptation of the variable VT(H) provided it is greater than the current value of the variable VT(H). It is

noted that USTATs always contain two, and only two list elements, which signal the gap to be signaled. N(R) in a USTAT is thus always "less" than the list elements contained.

The processing of received POLL-PDUs and STAT-PDUs as well as the administration of the new status variables VT(H) are based on the following rules:

When a USTAT-PDU is received, the credit information is rejected if the last list element of this message, namely List Element 2 ≤ VT(H). Otherwise, the credit information is processed and VT(H) = List Element 2 is set.

When a STAT-PDU is received, the credit information is rejected if the last list element List Element L < VT(H). Otherwise, the credit information is used and VT(H) = List Element L is set. However, if no list element is included, the credit information is rejected if N(R) < VT(H), otherwise, the credit information is used and VT(H) = N(R) is set.

Exemplary Embodiment 3:

Upgrading of the SSCOP and, hence, of the MSSCOP, is currently under discussion, to allow the receiver to send a STAT-PDU without this being a direct response to a POLL-PDU. (In the MSSCOP, these STAT-PDUs would replace the currently defined/discussed CREDIT-PDUs.) This is intended to make it possible for the receiver to transmit credit information whenever this appears to be worthwhile for the receiver. To do this, the receiver generates a STAT-PDU using the new credit information. Since the status of the receiver does not need to change between the transmission of a number of STAT-PDUs in one poll cycle, and the last list element and/or the parameter N(R) may, thus, remain the same, it is necessary to successively number the STAT-PDUs in the same poll cycle. This is done using the STAT sequence numbers. Otherwise, this exemplary embodiment is an extension to exemplary embodiment 2.

The SSCOP-PDU parameters N(SS) and the SSCOP Status Variable VR(SS) are introduced. When generating a STAT-PDU, N(SS) is set to the value VR(SS). VR(SS) is the next STAT sequence number which is used for successively numbering the STAT-PDUs within a pole cycle (one poll cycle is the time between the reception of two POLL-PDUs). The modified STAT-PDU format

is shown in Figure 1. Since N(SS) is written to a field which is currently identified as being reserved, an unmodified SSCOP protocol machine can also process such a message, since it does not process N(SS).

If a POLL-PDU with a new poll sequence number is received, then this is dealt with as normal. The only difference is that, VR(SS) = 0 is also set before a STAT-PDU is generated. If a further STAT-PDU is now intended to be generated within one poll cycle, in order to modify the credit, then this is done only if VR(SS) < 255. Otherwise, no such STAT-PDU is generated. (However, this is an acceptable restriction and is in any case better than not allowing any spontaneous modification of the credit at all.) If VR(SS) < 255, VR(SS) is incremented by 1, and a STAT-PDU is then generated.

Furthermore, two further SSCOP Status Variables are also required:

- VT(SS), this is the STAT sequence number of the most recently received STAT-PDU in the current poll cycle, or 0 if none has yet been received.
- VT(H), this is the greatest last list element of all the received STAT-PDUs and USTAT-PDUS.

The processing of received POLL-PDUs and STAT-PDUs as well as the administration of these new status variables are based on the following rules:

When a USTAT-PDU is received, then the credit information is rejected if the List Element 2 ≤ VT(H). Otherwise, the credit information is processed, and VT(H) = List Element 2 is set.

When a STAT-PDU is received, then VT(SS) = 0 is set, provided VT(PA) < N(PS).

If, now, N(SS) < VT(SS), then the credit information is rejected.

If N(SS) ≥ VT(SS) then VT(SS) = N(SS) is set, and the credit information is rejected if the last list element is L < VT(H). Otherwise, the credit information is used and VT(H) = List Element L is set.

Although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made

thereto without departing from the spirit and scope of the invention as set forth in the hereafter appended claims.

ABSTRACT OF THE DISCLOSURE

A protocol device in a protocol system for transmitting messages wherein both user data and monitoring information are transmitted in communication protocols. While (message) packets with user data are successively numbered in many protocols, thus ensuring that the user data are transmitted completely and with a protected sequence to the receiver, messages which contain only monitoring information are not normally successively numbered. This situation can lead to monitoring messages being overtaken, and thus to the rejection of current monitoring information. The present device addresses how the rejection of current monitoring information can be avoided.

**In the Claims:**

On page 10, cancel line 1 and substitute the following left-hand justified heading therefore:

CLAIMS

Please cancel claims 1-3, without prejudice, and substitute the following claims therefore:

4. A protocol device in a protocol system for transmitting messages, comprising:

a part for determining, based on protocol information which is contained in a monitoring message received by the protocol device, whether the monitoring message contains information which is newer than a current information state in the protocol device; and

a part for updating, if necessary, the information state based on the determination.

5. A protocol device in a protocol system for transmitting messages as claimed in claim 4, wherein the protocol device additionally successively numbers received monitoring messages for which it cannot reconstruct a sequence of the received monitoring messages based on the protocol information.

6. A protocol device in a protocol system for transmitting messages as claimed in claim 4, wherein the monitoring messages are messages for flow monitoring.

**REMARKS**

The present amendment makes editorial changes and corrects typographical errors in the specification, which includes the Abstract, in order to conform the specification to the requirements of United States Patent Practice. No new matter is added thereby.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Versions with Markings to Show Changes Made.**"

In addition, the present amendment cancels original claims 1-3 in favor of new claims 4-6. Claims 4-6 have been presented solely because the revisions by crossing out underlining which would have been necessary in claims 1-3 in order to present those claims in accordance with preferred United States Patent Practice would have been too extensive, and thus would have been too burdensome. The present amendment is intended for clarification purposes only and not for substantial reasons related to patentability pursuant to 35 U.S.C. §§101, 102, 103 or 112. Indeed, the cancellation of claims 1-3 does not constitute an intent on the part of the Applicants to surrender any of the subject matter of claims 1-3.

Early consideration on the merits is respectfully requested.

Respectfully submitted,

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BY _____

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**In the Specification:**

SPECIFICATION

TITLE OF THE INVENTION

PROTOCOL DEVICE IN A PROTOCOL SYSTEM FOR TRANSMITTING MESSAGES

~~Description~~

~~Protocol device in a protocol system for transmitting messages~~

~~1. What technical problem is your invention intended to solve?~~

~~2. How has the problem been solved until now?~~

~~3. In what way does your invention solve said technical problem (have you indicated the advantages)?~~

~~4. What is the special feature of the invention?~~

~~5. Exemplary embodiment or embodiments of the invention.~~

BACKGROUND OF THE INVENTION

~~Re 1.:~~

Both user data and monitoring information are transmitted using communications protocols. In this case, many protocols ensure that the user data is transmitted to the receiver complete (that is to say, all transmitted data is also received) and with a protected sequence (that is to say, in the correct sequence defined by the transmitter). For the user data, this is often done by the transmitter device in the protocol system successively numbering all the user data with a sequence number. (Message) packets which contain only monitoring information are normally not successively numbered, at least packets with certain classes of monitoring information. However, if the monitoring messages are now transmitted by the lower layer without sequence protection ~~then~~, this can lead to monitoring messages overtaking one another. If the fact that this overtaking has taken place is not identified, ~~this means~~ then, for the receiver of monitoring information, ~~that,~~ instead of working with up-to-date monitoring information, which is likewise available to it, it operates with obsolete monitoring information since it receives this as if it were up-to-date. This behavior is generally not critical for that

monitoring information which confirms message reception, since this information does not become obsolete. However, the rejection of current monitoring information which relates to flow monitoring (for example, credit information) due to the use of obsolete information is critical, since this information becomes obsolete very quickly. Dynamic window sizes, which are defined by the receiver, are particularly affected by this.

~~Insert:~~

Two definitions have been fixed with regard to flow monitoring. The term a "credit," which the receiver of user data messages (referred to as SD-PDUs in Q.2110) reserves for the transmitter via a monitoring message in this case ~~means~~, refers to the sequence number (contained in Q.2110 in the parameter N(MR) of a monitoring message~~;~~ for example ~~an~~, a STAT-PDU or USTAT-PDU) of that user data message which is the first which is no longer accepted by the receiver. The term ~~means~~"window size" refers to a number of user data items which the receiver is prepared to accept. In this case, the sequence number (contained in Q.2110, in the parameter N(R) of ~~an~~ a STAT-PDU or USTAT-PDU) is used as the counting starting point up to which the receiver has already received and acknowledged all the messages with a lower sequence number.

The present invention ~~now~~ describes how the rejection of current control information is avoided~~. This describes~~ and, in particular, how existing protocols which do not solve ~~the~~ this problem can be upgraded so that they do solve this problem.

It could be suggested that this problem need not be dealt with if the lower protocol layer guarantees sequence-protected transmission. However, if it is intended to set up a multilink connection using such a layer, then it must also be expected that messages will overtake one another in a layer such as this.

~~Re 2.:~~

If a restriction is imposed such that the receiver cannot withdraw a credit once ~~again once~~ it has been allocated, then the abovementioned problem ~~can~~ easily can be solved simply by not processing monitoring information which contravenes

this rule. This corresponds to the solution in the TCP/IP protocol. This also includes the situation where the window size is constant.

A further simple possibility for solving the problem is to successively number all the monitoring information and then to treat the monitoring information in an analogous manner to the user data. However, it is difficult to introduce this retrospectively into the protocols, since the message format would generally need to be changed for numbering. However, this is generally unacceptable for compatibility reasons when upgrading existing protocols.

The capacity to withdraw the credit is an important characteristic in some protocols~~,~~; for example, SSCOP. At the moment, the problem appears to be insoluble for protocols such as these.

## SUMMARY OF THE INVENTION

~~Re 3.:~~

~~In the case of the solution specified here~~ Pursuant to the teachings of the present invention, the receiver of the monitoring message can always decided whether this monitoring message received by it contains information which is newer than its current information state. It is, thus, impossible for older information to overwrite more current information when messages overtake one another.

In order to decide whether information obtained from a received monitoring message is newer than the already available information~~. Protocol~~, protocol information (monitoring information which is used for monitoring the user data messages, for example confirming reception of user data messages, indicating that user data messages have not been received or containing the sequence number of that message up to which all messages have been received without any gaps) is used, provided this is possible. If the transmission sequence cannot be reconstructed on the basis of the protocol information contained in the monitoring messages, ~~then the only monitoring messages,~~ then the only monitoring information items which are additionally successively ~~number~~ numbered are those for which this is absolutely essential, and which allow such introduction.

~~Re 4.:~~

One special feature of the present invention is the skillful combination of a message format change which is compatible with the existing protocol, with analysis of the protocol, in order to allow the receiver of the monitoring information to reconstruct the time sequence of transmission of the monitoring information. It is thus possible to reject old information.

Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the Figures.

## BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows a table of protocol information in a monitoring message in connection with the teachings of the present invention.

## DETAILED DESCRIPTION OF THE INVENTION

~~Re 5.:~~

The following text describes three exemplary embodiments, which are all based on the SSCOP protocol. SSCOP, defined in Q.2110, assumes that the lower layer transmits the data with sequence protection. As discussed ~~in 1~~ above, the problem under discussion ~~thus~~ does not occur here. However, SSCOP is at present being upgraded in order to have multilink compatibility and to function via a lower layer, which does not ensure sequence-protected transmission. This corresponds to the MSSCOP (the draft Q.2111 at the Standard before the start of the meeting of ITU-T-working party 5/11 and the notice of the Study Questionnaire 15/11, Washington, June 28 to July 1, 1999), as is currently being discussed in the ITU. However, the problem under discussion here is not solved there.

Exemplary Embodiment 1:

The simplest method consists of no longer having the capability to reduce the credit in the MSSCOP. However, this represents a major restriction of the protocol. On receiving ~~an~~ a STAT-PDU, the credit information would be rejected if the received credit were less than the current credit.

Exemplary Embodiment 2:

In the MSSCOP protocol (the draft Q.2111 at the Standard before the start of the meeting of ITU-T-working party 5/11 and the notice of the Study

Questionnaire 15/11, Washington, June 28 to July 1, 1999), as is currently under discussion, the transmission sequence can be reconstructed only from the protocol information in the STAT-PDUs and USTAT-PDUs. No message format need be changed in this exemplary embodiment.

In SSCOP, the transmitter (of the user data) uses the protocol information which is contained in the list elements and in the parameter N(R) of the received STAT- and USTAT-PDUs as follows:

When already transmitted user data messages are confirmed by list elements or the parameter N(R) of the received STAT- and USTAT-PDUs without any gaps up to a specific sequence number, the variable VT(A) of the transmitter is changed such that it once again contains the value of the next ("oldest") message to be confirmed.

Furthermore, the information in the list elements is used to decide whether certain messages in the transmission buffer must be retransmitted or have been confirmed by the receiver. The parameter N(R) is also used for the latter. If messages have been confirmed, they can be removed from the transmission buffer, otherwise this is not allowed by the user of the SSCOP. (In this case, the SSCOP parameter Clear Buffer has the value FALSE).

According to the present invention, an additional SSCOP Status Variable VT(H) is now introduced for the transmitter. The new variable VT(H) in each case stores the largest last list element of all the received STAT-PDUs and USTAT-PDUs(; the last list element in the STAT-PDU indicates the highest SD-PDU expected by the receiver, assuming that the STAT-PDU contains any list elements at all, and, in ~~an~~ a USTAT-PDU, the last list element is used to signal the first SD-PDU received after the reception gap signaled by the USTAT-PDU.

If a received STAT-PDU does not contain any list elements, then the parameter N(R) contained in the STAT-PDU is used for adaptation of the variable VT(H) provided it is greater than the current value of the variable VT(H)~~(Note:~~ It is noted that USTATs always contain two, and only two list elements, which signal the gap to be signaled. N(R) in a USTAT is thus always "less" than the list elements contained.

The processing of received POLL-PDUs and STAT-PDUs as well as the administration of the new status variables VT(H) are based on the following rules:

When ~~an~~ a USTAT-PDU is received, ~~then~~ the credit information is rejected if the last list element of this message, namely List Element 2 ≤ VT(H). Otherwise, the credit information is processed and VT(H) = List Element 2 is set.

When ~~an~~ a STAT-PDU is received, the credit information is rejected if the last list element List Element L < VT(H). Otherwise, the credit information is used and VT(H) = List Element L is set. However, if no list element is included, the credit information is rejected if N(R) < VT(H), otherwise, the credit information is used and VT(H) = N(R) is set.

Exemplary Embodiment 3:

Upgrading of the SSCOP and, hence ~~also~~, of the MSSCOP, is currently under discussion, to allow the receiver to send ~~an~~ a STAT-PDU without this being a direct response to a POLL-PDU. (In the MSSCOP, these STAT-PDUs would replace the currently defined/discussed CREDIT-PDUs.) This is intended to make it possible for the receiver to transmit credit information whenever this appears to be worthwhile for the receiver. To do this, the receiver generates ~~an~~ a STAT-PDU using the new credit information. Since the status of the receiver does not need to change between the transmission of a number of STAT-~~PDU~~ PDUs in one poll cycle, and the last list element and/or the parameter N(R) may, thus, remain the same, it is necessary to successively number the STAT-PDUs in the same poll cycle. This is done using the STAT sequence numbers. Otherwise, this exemplary embodiment is an extension to exemplary embodiment 2.

The SSCOP-PDU parameters N(SS) and the SSCOP Status Variable VR(SS) are introduced. When generating ~~an~~ a STAT-PDU, N(SS) is set to the value VR(SS). VR(SS) is the next STAT sequence number which is used for successively numbering the STAT-PDUs within a pole cycle (one poll cycle is the time between the reception of two POLL-PDUs). The modified STAT-PDU format is shown in Figure 1. Since N(SS) is written to a field which is currently identified as being reserved, an unmodified SSCOP protocol machine can also process such a message, since it does not process N(SS).

If a POLL-PDU with a new poll sequence number is received, then this is dealt with as normal. The only difference is that, VR(SS) = 0 is also set before ~~an~~ a STAT-PDU is generated. If a further STAT-PDU is now intended to be generated within one poll cycle, in order to modify the credit, then this is done only if VR(SS) < 255. Otherwise, no such STAT-PDU is generated. (However, this is an acceptable restriction and is in any case better than not allowing any spontaneous modification of the credit at all.) If VR(SS) < 255, VR(SS) is incremented by 1, and ~~an~~ a STAT-PDU is then generated.

Furthermore, two further SSCOP Status Variables are also required:

- VT(SS), this is the STAT sequence number of the most recently received STAT-PDU in the current poll cycle, or 0 if none has yet been received.
- VT(H), this is the greatest last list element of all the received STAT-PDUs and USTAT-PDUS.

The processing of received POLL-PDUs and STAT-PDUs as well as the administration of these new status variables are based on the following rules:

When ~~an~~ a USTAT-PDU is received, then the credit information is rejected if the List Element 2 ≤ VT(H). Otherwise, the credit information is processed, and VT(H) = List Element 2 is set.

When ~~an~~ a STAT-PDU is received, then VT(SS) = 0 is set, provided VT(PA) < N(PS).

If, now, N(SS) < VT(SS), then the credit information is rejected.

If N(SS) ≥ VT(SS) then VT(SS) = N(SS) is set, and the credit information is rejected if the last list element is L < VT(H). Otherwise, the credit information is used and VT(H) = List Element L is set.

Although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made thereto without departing from the spirit and scope of the invention as set forth in the hereafter appended claims.

~~Abstract~~

~~Protocol device in a protocol system for transmitting messages~~

ABSTRACT OF THE DISCLOSURE

A protocol device in a protocol system for transmitting messages wherein both user data and monitoring information are transmitted in communication protocols. While (message) packets with user data are successively numbered in many protocols, thus ensuring that the user data are transmitted completely and with a protected sequence to the receiver, messages which contain only monitoring information are not normally successively numbered. This situation can lead to monitoring messages being overtaken, and thus to the rejection of current monitoring information. The ~~invention describes~~ present device addresses how the rejection of current monitoring information can be avoided.

# Modified STAT-PDU

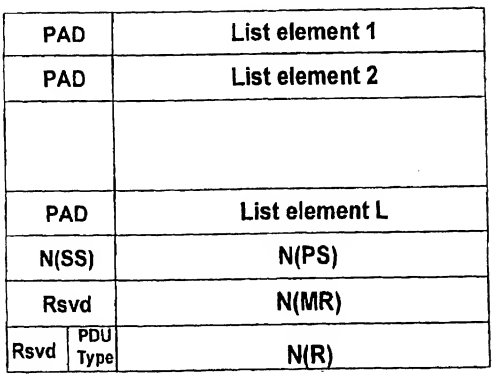


Figure 1